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TITLE: ULTRASONIC MOTOR
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ABSTRACT:

PURPOSE: To enhance the efficiency of an ultrasonic motor by employing a plurality of materials having different densities as materials used for a head mass part of a stator to optimize it, and bringing vertical resonance into coincidence with torsional resonance.

CONSTITUTION: A wear resistant material 24 is adhered to a rotor 19. When a voltage is applied to a vertical piezoelectric element 13 and a torsional piezoelectric element 14, phase difference of voltages is suitably regulated, and vertical resonance frequency is brought into coincidence with

torsional resonance frequency at the time of high power excitation, the resonances are combined by vertical and torsional amplitudes in a boundary between a stator 18 and a rotor 19 to cause a strong elliptical vibration. Since head masses 1, 2 made of materials having different densities do not have so high stiffness, they do not contribute to variation in the resonance frequency of the vertical vibration, but act as large inertial mass with respect to the torsional vibration. Accordingly, the resonance frequency of the torsional vibration is remarkably lowered.

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